N. K. Bigelow
Morris
ROYAL ONTARIO MUSEUM OF ZOOLOGY

The Canadian Entomologist

VOLUME LIII.

No. 11

CONTENTS.

Morris—Life-History of a Hobby Horse. Part III. 241
Chamberlin—Some Arachnids from S. Utah 245
Tothill—Revision of the Nearctic Species of the Genus Ernestia 247
Hopping—Review of the Genus Monochamus 252
Curran—A New Western Syrphid 258
Curran—A Genus and Species of Syrphidae new to Canada 260
Book Review—Applied Entomology by H. T. Fernald 261
Obituary—Rev. Thos. W. Fyles 262
Corrections and Emendations 264

EDITOR:

DR. J. McDUNNOUGH

ENTOMOLOGICAL BRANCH

DEPARTMENT OF AGRICULTURE, OTTAWA

Editor Emeritus: REV. C. J. S. BETHUNE

November, 1921

ORILLIA:

THE ORILLIA NEWS-LETTER

1922

The Topley Company

Ottawa

Canadian Representatives

Bausch & Lomb Optical Co.
Will Corporation

Rochester, N. Y.

Laboratory Equipment Microscopes

BRILLIANT TROPICAL BUTTERFLIES

Especially suitable for decorative and art work. Morpho sulkowski, hecuba, rhetenor, amathonte, cypris, achillaena; Ornithoptera brookiana, hebuca; Papilio paris, blumei; Urania ripheus, Chrys. virgaureae, Vanessa is, Lyc. belargus, corydon, etc., as well as different species of Chlorippe, Eunica, Catagramma, Batesea, Perisama and many others. Send for price list. Callicore $8.00 per 100. Lycaena exilis $4.00 per 100, $37.50 per 1000.

HAL NEWCOMB, 804 Elizabeth St., Pasadena, California

GRASSELLI

BRAND

ARSENATE LEAD—Paste and Powder
BORDEAUX MIXTURE—Powder
CALCIUM ARSENATE—Powder
LIME SULPHUR SOLUTION

Represent

THE HIGHEST STANDARD IN SPRAY CHEMICALS

The Grasselli Chemical Co. Limited

HAMILTON TORONTO MONTREAL

NOTICE: All articles for publication and correspondence relating to them should be addressed to the Editor: DR. J. McDUNNOUGH, Entomological Branch, Department of Agriculture, Ottawa.

Remittances for fees and subscriptions and all other business communications should be addressed to:—THE ENTOMOLOGICAL SOCIETY OF ONTARIO, Guelph, Canada.

EXCHANGES

Subscribers are invited to make liberal use of this column. Notices over three lines are liable to be shortened if necessary. All insertions free to subscribers.

WANTED—Cynipidae and their galls from all parts of the world. Western and Southern material particulary wanted. For cash or exchange. Wm. Beutenmuller, Box 258, Highwood, Bergn Co., New Jersey.

FOR EXCHANGE—Mounted Macro and Micro Lepidoptera from this locality. Fred Marloff, 118 Oak Road, Mt. Oliver Branch, Pittsburg, Pa.

WANTED—To purchase living material, especially ova or live females of any species of the genus Apantesis (Arctiidae). Dr. E. T. Learned, Fall River, Mass.

LEPIDOPTERA from South America, Morpho menelaus, rhetenor, hecuba, etc. Papilio agrias. Wholesale only. Ed. Allen & Co., St. Jeandu-Maroni, French Guiana, South America.

WANTED—Micro-Lepidoptera from all parts of N.A.: write first what you have; cash or exchange. Clarence T. Wood, 98 North Street, Fairport, Monroe Co., N.Y., U.S.A.

HALTICINI wanted in exchange for Coleoptera or other orders.—L: G. Gentner, 213 Bailey St., East Lansing, Mich., U.S.A.

JAPANESE and Formosan Butterflies in exchange for those from any part of the world. S. Satake, 48 Aoyama Minami-Machi, 5-Chome, Tokyo.

OMOPHRON and ELAPHRUS desired, in numbers, including the common species. Good exchange given. H. F. Wickham, Iowa City, Iowa.

WANTED—Species of Rhynchophora from Eastern North America not represented in my collection, in exchange for duplicates from Indiana and Florida. Lists of desiderata and duplicates on application. W. S. Blatchley, 1530 Park Avenue, Indianapolis, Indiana.

BRACHYNUS wanted from any part of North America. Cash or exchange. J. W. Green, 520 McCartney Street, Easton, Pa.

CLERIDAE wanted from any part of the world for cash or in exchange for any insect material from Sumarta.—J. B. Corporal, Holland, The Hague, Pieter Bothstraat 39.

LEPIDOPTERA—Will purchase or give good western species in exchange for Western Canada Noctuids. Pacific Coast species preferred. Chas. A. Hill, 1601 Sierra Bonita Ave., Los Angeles, Calif.

WANTED—5-800 Samia columbia living cocoons; communicate with Edward Sasek, 760 East 160th Street, New York, N. Y.

COLEOPTERA—Common species of this region in exchange for Coleoptera or Lepidoptera from any part of the world. Correspondence invited. Basil E. Montgomery, Poseyville, Ind.

CYNIPIDAE—Galls or the bred makers desired, to determine or for exchange. Also want to buy a copy of Das Tierreich XXIV, Cynipidae. Alfred C. Kinsey, Bloomington, Ind.

FLORIDIAN LEPIDOPTERA offered in exchange for Saturniid, Citheronid (Ceratocamid), etc. living pupae. D. M. Bates, Ft. Lauderdale, Fla.

CHANGE OF ADDRESS—Richard Tompkins de Garnett now 583 Merrimac St., Oakland, Cal.

LIVING PUPAE of P. troilus, P. turnus, H. diffinis, for exchange or for sale, 80 cents per dozen. African Butterflies for sale. Send for list. J. N. Lang, 1433 So. 59th Ave., Cicero, Ill.

WANTED—Species of Homoptera, Hemiptera and Orthoptera not represented in my collection in exchange for duplicate material of these orders from South Dakota. List of duplicates on application. H. C. Severin, South Dakota State College, Brookings, South Dakota.

LEPIDOPTERA and COLEOPTERA wanted from any part of the world for cash, or in exchange for any insects from Western Ontario. Olaf S. Wendorf, Box 294, Hanover, Ontario, Canada.

Mailed Thursday, February 23rd, 1922.

Catocalae Wanted

For cash, Ova, Larvæ as well as the Imago of species of the genus indigenous to Canada. HIGHEST PRICES paid for ova with parent moth.

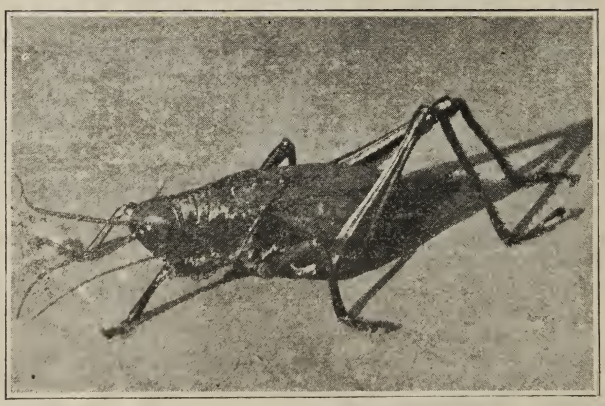
I invite correspondence with collectors who are willing to collect material for me.

Address:

GEORGE J. KELLER

488 Clinton Avenue **Newark, N.J.**

FOR TEACHER, STUDENT AND COLLECTOR



Classroom Material. Collectors outfits and requisites.
Riker Mounts and Insect Specimen Cabinets, Lantern and Microscopic Slides, Projection Apparatus, Microscopes and Accessories.
Price and quality are right. Always order from

SCHOOL EQUIPMENT
McKAY
LIMITED - TORONTO

615 YONGE St., Toronto

The Canadian Entomologist

Vol. LIII. ORILLIA, NOVEMBER, 1921. No. 11.

POPULAR AND PRACTICAL ENTOMOLOGY

The Life History of a Hobby Horse

by francis j a. morris,
Peterborough, Ont.

Part III.—Second Childhood—The Tree's Incline.

(Continued from Page 221)

So long as they held the middle space I had thought them a pair of ospreys, but presently, when they had already reached the greatest height I have ever seen these fish hawks flying at, one of the birds rose leisurely up in spiral upon spiral till it appeared little bigger than a skylark " at the last point of vision"; then down it shot in that fearful dive so closely past the outspread form of its floating mate that she seemed to rock where she slept; "she," for I am almost certain it was the male that made this supreme plunge from empyrean heights; the other, more passive, maintained the middle space, only now and then stooping, in turn, directly over him, or sweeping aslant with a downward glide to meet him in the common highway of the lesser fowls before he had fully recovered and soared once again into the unchallenged void of his eagle's realm. For nearly an hour from the little row-boat in which I was fishing I watched this royal pair at play.

At the end of August, there used to be a great routing out of guns, cleaning and oiling, ready for Black Duck; then came Wood-duck and Teal both the Blue- and the Green-winged, and later still Blue-bills, Saw-bills, Whistlers and several others. The only bird guide available in those days was McIlwraith's "Birds of Ontario," and I remember hours of puzzling one evening over a couple of strangers in the day's bag, that turned out to be two distinct species of Scoter, a surf duck from the Atlantic coast seldom seen in the neighborhood. And once my pupil returned from near the Mississippi Lake with a Cormorant that had fallen to some lucky gun.

These hunting trips were often the means of enriching our knowledge of Nature by curious observations. One day when my pupil and two others had carefully ensconced themselves in a lonely piece of swamp, each at a different station and in good time for the incoming ducks at sundown, they discovered to their surprise a fourth sportsman had anticipated their calculations and slipped into a "hide" in front of them. All three were watching the first black duck of the evening come whirring towards them, and not yet certain which of the three the duck would select to pass over, when suddenly a large hawk rose from ambush before their eyes, clutched the duck from below, and drew it down again out of sight in the drowned lands. The whole thing was done in a second and apparently with consummate ease; it looked as simple as the movements of a gymnast where the art of concealing art blinds one to all the nicety of adjustment, the hair's breadth balance of time and

space; only those who know the weight of a black duck and the terrific speed of its flight across a danger zone in mid-September, when plunging towards its nightly roost, can have the slightest idea of what this piece of falconry meant.

The tables were turned when one of these "duck hawks" suddenly seized a wooden decoy we had put out in a small bay and tried to drag it from its moorings. The savage anger of its blows with the beak and repeated clutchings of claw, made a deeper impression on us than they did on the perfidious piece of basswood itself; though this too showed plainly by dint and score where mandibles had glanced and talons slipped in their stroke.

I remember one day when my pupil and I went up the lake with a batch of decoys in search of wood duck and teal. On the way up I landed a couple of bass with a trolling rod, and then we drew our boats into cover of the reeds and entered the "hide". We hadn't been there many minutes when we heard a scrambling sound from my boat, and I was just in time to see a mink drop one of the bass over the gunwale and make off through the cat-tails on "safety first" principles. They are astonishingly bold and will steal bait from a minnow pail almost under one's nose. While waiting patiently in the hide, we heard the whistling of wings as from an approaching flock of wood duck. But nothing appeared and the sound lasted on and on without perceptibly waxing or waning; I could make nothing of it; it might have been a phantom flock tethered in a nightmare, beating the air but making no progress. My companion's ears were better trained than mine and he soon solved the riddle; a vast phalanx of wild geese strung across the sky on their southward march, with leaders and outriders all in order; they appeared almost as specks so high were they flying, yet the sound was plainly audible for many minutes.

In 1899, the year before I settled in Port Hope, it was my good fortune to spend spring and early summer in Toronto. My best finds were botanical, and the only bird record I made was very early in May towards the west of High Park. I had just discovered a great colony of Skunk Cabbage in a small willow swamp, when almost over my head I heard some full sweet tones of bird music; they came from a nearby poplar just leafing out, and by tip-toeing cautiously up I was able to spy the singer and watch him through his song,. As soon as I described the bird to Dr. Brodie he proclaimed it the Rose-breasted Grosbeak. I had never seen or heard of it before, and though I often saw it afterwards at Port Hope, I never heard it in full song until I came to Peterborough; now, whenever I hear it, I am carried back in spirit to High Park and the revelation of twenty years ago. The plant treasures were far more numerous, and so interesting as to fill the whole season with delightful surprises; east of the city I discovered the little Rue Anemone, which Dr. Brodie assured me he had never found except west of Toronto; up north I found the handsome Orange Lily and the nodding heads of the Woodlily; the Turk's Cap, also, I found at Scarborough Heights; in Rosedale, too, I first found the "wooden enemies" of my Scottish home (*Anemone nemorosa*), the most delicate and charming of all their kind—the true "wind-flower;" to the west I found the lovely blue Lupine, the Orange Milkweed, the Beard-tongue, the Feverwort and the Painted Cup. By the following April I had settled in Port Hope.

That Natural History takes firmer hold in a community of boys than anywhere else, was amply borne out at my new home of Trinity College School. For years its Head Master had been Dr. Bethune, an entomologist of continental reputation. Though athletics held a high place of esteem, there was always an awkward squad of a minority poor at games and forming a kind of Stalkey & Co. in the school. Such boys have often a natural trend in the direction of birds' nesting; and there had always been a good deal of surreptitious egg-collecting done by the pupils; this was "taboo" among the masters, and in order to make the ban effective, some wise-head of earlier days had instituted an annual prize for wild flowers; a rule of the competition was that each collection of plants must be the work of two boys in partnership. This incentive of a prize largely explains why there were usually at least four or five pairs of partners working quite enthusiastically through the summer term at their collecting, mounting, and naming of specimens. Almost as soon as I joined the staff my room became the resort of the plant collectors, and when they organized into a Field Club, they asked me to be their Honorary President.

My first two seasons were spent in active pursuit of Botany and Ornithology. I had cleared the way, I thought, enough to run both hobbies concurrently. It was now that I began to fill two shelves with books on Natural History, one devoted to plants and the other to birds, the nucleus of a whole case now numbering some 400 volumes. I never felt quite the same need of books, for purposes of identification, in Botany as in Birds. When I came to the school first I had nothing on Ornithology but a copy of McIllwraith; besides that, I knew of a periodic publication called "Birds", afterwards "Birds and All Nature". But almost coincident with my settling in Port Hope there began to appear a number of popular books, with colored illustrations, on various branches of Natural History. The pictures were nearly all photographic by the three-colour process. My first purchase was Chapman's Bird Life and this was followed by the volumes of Neltje Blanchan on "Bird Neighbors" and "Birds that Hunt and are Hunted", Dugmore's "Bird Homes", Chester Reed's "Color Key to North American Birds" and "Key to the North American Birds' Eggs;" more recently still were added the invaluable little pocket books of bird pictures, description and classification; besides these I purchased (on a hint from one of John Burroughs' essays) a pair of field glasses, and always carried notebook and pencil to the woods with me; in this way I formed the habit of complex observations, attempting to jot down the syllables of a bird's song or to describe it in words, to watch its coloring in different parts, wings, tail, body, head, throat and breast, its perch and manner of flight, and generally its habits; my first volumes on Birds were too large to carry to the woods, but on returning to my study I always made a bee line for the book shelf. At first my trips were primarily botanical and only included bird notes on the side. But I made a number of most interesting observations, and in my almost daily excursions saw a great many out of the way birds and bird homes. I never took an egg, even the rarest, and never (I am happy to add) had the slightest desire to.

While busy with bird observations, I found it a great pleasure to note the birds seen in the winter and the early spring arrivals till the flights of warblers. Among the birds that I saw occasionally all winter were robins; these appeared

to go into winter quarters in thickets of cedar about the golf links, and in mild Decembers and Januaries I have often seen them hopping about in the open; two mild years I saw Kingfishers on the running water below Corbett's pond and noted them every month from October to April; one more proof that it is want of food, not cold, that drives them south; I have also seen Meadow Larks in December. Among regular winter residents (besides Chickadees and Wrens) were noted Snow-birds, Horned Larks, Siskins, Goldfinches, Purple Finches, Red-polls, Wax-wings, Pine Grosbeaks and the Evening Grosbeak. In spring, favorites were the Ruby- and Golden-Crowned Kinglets, the American Redstart, the Black and White Warbler, the Blackburnian, the Chestnut-sided, the Bay-breasted, the Canadian and the Black-throated Blue Warblers.

A season or two's rambling about the neighborhood soon led to the selection of some five favorite haunts for my leisure hours:—Monkey Mountain on the outskirts of the town; Choate's Wood, the North Wood and "The Rocky Mountains", all three in line for a single round trip; and last the Newtonville swamp about ten miles west. At Monkey Mountain I discovered a favorite haunt of the Brown Thrasher, and spent hours listening to its masterful music. It was here, too, that I first discovered (to my surprise) the double personality of the Chickadee; the bird I was watching at its trapeze work suddenly passing from the familiar scolding prattle to a soft deliciously sweet and plaintive "Tee-hee"; different from the Phoebe's cry, which is not nearly so musical nor plaintive at all. The most attractive of all the Flycatcher calls in my experience is the Olive-sided Flycatcher's "Whip-whee-eu", loud, clear, and commanding, but no way harsh (the common fault of the Flycatchers); next to it I place the Crested Flycatcher's, more imperious and slightly harsh, but not to the point of disagreeable. The Crested Flycatcher is quite common about Port Hope and once I had a curious experience. I was working in my room about supper time when there came to my door a shuffling of feet and then a hesitating knock. In came two boys who explained that they wanted to show me something, if I would promise not to forfeit it; they had been bird's nesting and had found a strange egg in a nest built over an old Highholder's in a hollow apple tree. Reference to Chester Reed's book soon brought the discovery that it was a Crested Flycatcher's. Knowing the peculiar instinct of this bird to weave a snake's skin into its building material I asked the boys if they had noticed anything peculiar about the nest. They hadn't, but would go and look carefully over it next day; on their coming to report I was to tell them the name of the egg. In they came, full of excitement, with what, do you suppose, in their hands? Not the slough of a snake, but a mighty good substitute they had found in the material of the nest—five or six crumpled pieces of oil-paper candy-wrappers! John Burroughs records having seen onion-peel and the scales of shadfish in their nests where the birds had failed to find snake skins. It seems possible, too, that the Flycatcher does his own fishing for shad; not long ago a Flycatcher was seen, by a good observer, to play the Kingfisher and pick a live shad out of the water, on the shore of Lake Ontario. This curious habit of the Crested Flycatcher is apparently inherited from tropical ancestors and is shared with it (so I have read) by one of the common Flycatchers of Brazil.

The whole course of my round from Choate's to the North Wood and "The Rockies" was soon dotted with discoveries. Near Mitchell's Gardens I

saw my first Orchard Oriole; and a few rods further on, the larder of a Northern Shrike; the bird was fluttering at the top of a barb wire fence and on my approach flew heavily away with what looked like a sparrow; on examining the fence I found the two top strands of wire, all the way along between two posts, had been used for killing and hanging the butcher's meat, the barbs having remains of beetles, birds and mice smeared about them.

(To be Continued.)

ON SOME ARACHNIDS FROM SOUTHERN UTAH

BY RALPH V. CHAMBERLIN,
Cambridge, Mass.

In a small collection of spiders and scorpions from St. George, Utah, sent me for identification, are representatives of two new species which are here described. The other species in the lot are also listed. The material was collected by Mr. V. L. Tanner.

ARANEINA.

Dictyna volucripes Keyserling.

One female of this widespread species, which is common in central and northern Utah.

Psilochorus utahensis Chamberlin.

One female apparently this species, which is common in Millard Co., from where described.

Physocyclus tanneri, sp. nov.

Female.—As compared with *P. globosus* Tacz. this is a larger species with much longer and stouter legs. It may at once be distinguished by lacking the caudal process at caudal end of cephalothorax and the opposing chitinous spot on abdomen which are characteristic of *globosus*. The abdomen is obviously less elevated and more flattened above, and in front protrudes farther over the cephalothorax; its anterior end somewhat bigibbous (cf. fig. 1.) The epigynum has the anterior processes larger as compared with the posterior portion and much more widely separated, posterior portion less protuberant; the fold just back of genital furrow stronger, on a level with contiguous part of epigynum, dark and chitinous. The epigynum more resembling that of *P. cornutus* of Lower California. Cf. Plate X, figs. 2, 3, 4 and 5.

Length 4.5 mm.; length of leg, 1.33 mm.

Two females.

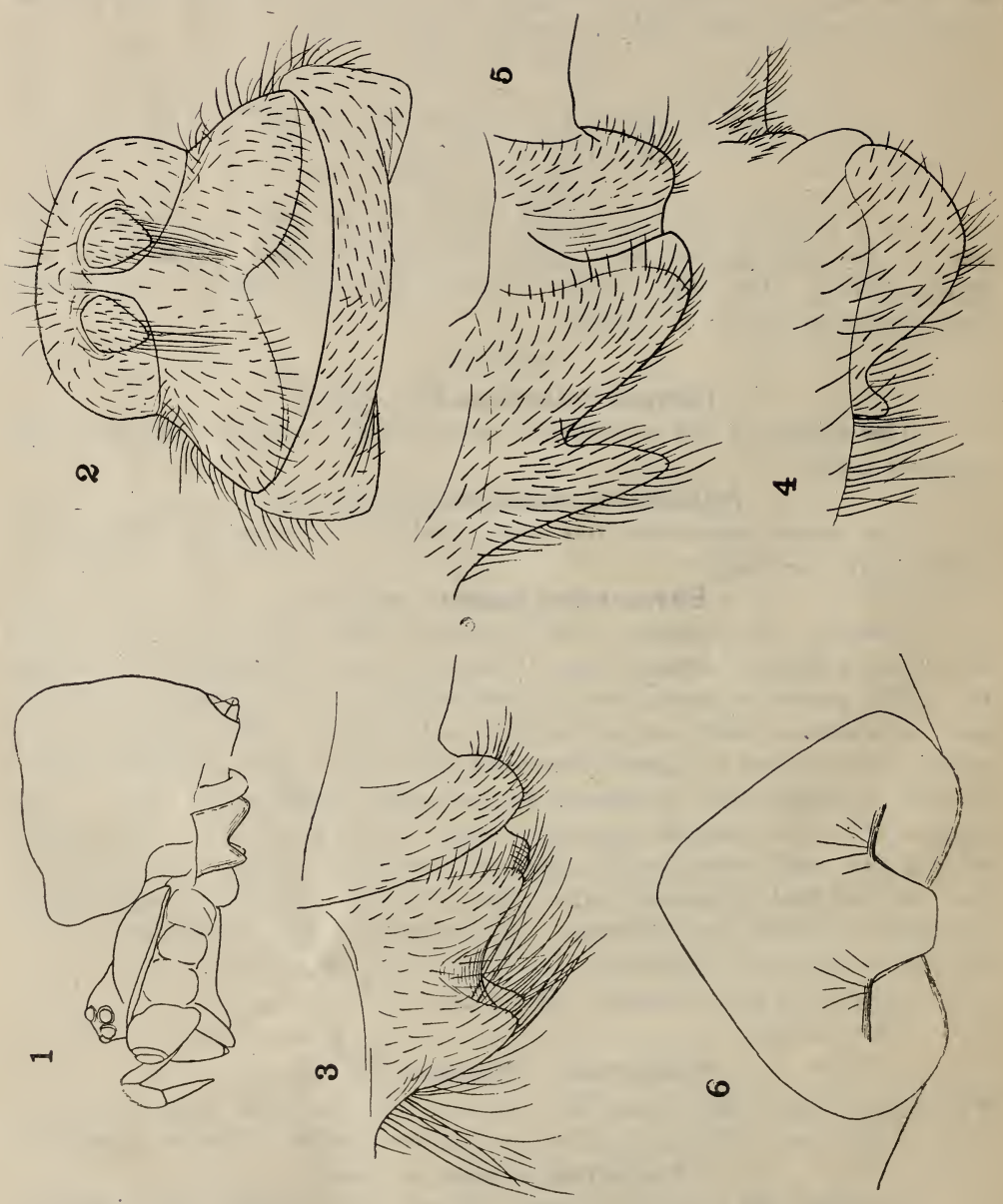
Philodromus virescens Thorell.

Philodromus clarus Keyserling, Die Spinnen Amerika, 1880, I, p. 214.

One male of this form, which is common farther north on sage-brush.

Philodromus utus, sp. nov.

In alcohol the carapace is greyish fulvous, with a lighter greyish median longitudinal stripe more or less evident. Legs colored similarly to carapace. Abdomen grey, without distinct markings. Venter pale. Posterior median eyes a little more than twice their diameter apart, about half as far from the laterals, or a little more. Anterior lateral eyes nearer to the posterior medians than to the posterior laterals. Tibiae I and II with three pairs of long, overlapping spines beneath. Spines of metatarsi I and II similarly three pairs be-



ARACHNIDS FROM S. UTAH.

(See Page 247)

neath and overlapping. Abdomen depressed, somewhat bigibbous in front. Characterized more particularly by the form of the epigynum. (cf. Plate X, fig. 6.).

Length, 5 mm.

Several females.

Tibellus duttonii Hentz.

One female apparently this species.

Olios fasciculatus Simon.

Two females.

Pardosa sternalis Thorell.

Several females and males. This is one of he commonest spiders found in the intermountain region.

Lycosa apicata Banks.

One male. The species has not previously been taken in the region.

Oxyopes salticus Hentz.

One female.

Phidippus workmanii Peckham.

Three females.

Phidippus formosus Peckham.

One female.

Salticus albocinctus Peckham.

A male and female. Previously known from Arizona and Mexico.

Eurypelma steindachneri (Ausserer).

One female.

SCORPIONIDA.

Hadrurus hirsutus (Wood).

One specimen of this large form.

Velovis mexicanus (Koch).

One specimen.

EXPLANATION OF PLATE X.

Fig. 1.—*Physocyclus tanneri,* sp. n., lateral view of body. x 10. 2.—The same, epigynum, ventral view. x 33. 3.—The same, ectal view of epigynum. x 33. 4.—*Physocyclus globosus* Tacz., epigynum, ectal view. x 33. 5.—*Physocyclus cornutus* Bks., epigynum, ectal view. x 33. 6.—*Philodromus utus,* sp. n., epigynum, ventral view. x 38.

A REVISION OF THE NEARCTIC SPECIES OF THE TACHINID GENUS ERNESTIA R. D. (DIPTERA)

BY DR. JOHN D. TOTHILL

In Charge of Natural Control Investigations, Entomological Branch, Ottawa.

(Continued from Page 230)

Ernestia nigropalpis sp. n.

Head at vibrissae about as thick as at base of antennae; vibrissae far above the oral margin. Palpi black. Eyes hairy. Cheeks (below the eyes) white pollinose on a black ground with black hairs coming nearly up to the

eyes and with a row of stouter hairs at the oral margin. Distance from the oral margin to base of eye equal to about one-third the eye height. Sides of face covered with silvery pollen; bare; narrowest width slightly less than the length of the second antennal segment and equal to about one-third the distance between the vibrissae. Facial ridges bristly on lowest fifth. Facial depression silvery pollinose, without any carina. Antenna in male reaching lowest three-fourths of the face, all three segments black; third segment in male almost twice as long as the second. Arista thickened on basal two-fifths; the penultimate segment no longer than broad; width of front in male at narrowest point measuring slightly less than the length of the second antennal segment, silvery pollinose becoming black at vertex; frontal vitta dull, dark-brown, at narrowest point slightly wider than either side of front. No orbital bristles in male; the frontal bristles extending to base of third antennal segment. Ocellar bristles present in male, directed forward.

Thorax subshining, black, covered with grey pollen; scutellum grey pollinose on a black ground tinged faintly reddish at apex. Three sternopleural bristles and three to four post suturals; scutellum with three marginal pairs of machrochaetae and a terminal cruciate pair. Legs black, the middle tibiae with two or more bristles on the front side near the middle, the hind tibiae without a comb-like row of bristles on the outer side. Wings hyaline; R_{4+5} (third vein) with a group of three to five bristles at the base on both the upper and lower surface. Tegulae white.

Abdomen subshining; silvery pollinose on a black ground. Discal bristles present on the second, third and fourth abdominal segments; a pair of median marginal machrochaetae also present on each of these segments. The fifth tergum very narrow and rather indistinctly marked off by a suture from the sixth tergum with which it is united. Sixth abdominal segment almost as long as the fourth and forming a conspicuous genital segment.

The black genitalia of the male are characterized by there being a short median keel situated on the basal part of the inner forceps (valvae internae), and by the fact that this keel is not concave in profile on either of its two margins.

The horseshoe-like indenture of the fifth sternite extends rather less than half way into the sternite.

Described from eleven males taken at Franconia N.H., Stickeen River, B. C. (type locality), and Savary Island, B. C., by Messrs. C. H. T. Townsend, Wickham and R. S. Sherman.

Type in the Canadian National Collection, Ottawa. The paratype. No. 24354, from Franconia in the U. S. N. M., Washington, D.C.

Ernestia arcuata sp. n.

Head at vibrissae about as thick as at base of antennae; vibrissae far above the oral margin. Palpi usually yellow at the tip and infuscated basally, occasionally black. Eyes hairy, cheeks (below the eyes) white pollinose on a black ground, subshining on the lower part that is covered with black hairs, a row of stouter hairs at the oral margin. Distance from the oral margin to base of eye equal to about one-third the eye height. Sides of face covered with silvery pollen; bare; narrowest width in male slightly less than the length of

the second antennal segment and equal to about two-fifths the distance between the vibrissae. Facial ridges bristly on lowest fourth. Facial depression silvery pollinose, without any carina. Antennae in male reaching the lowest fourth of the face, all three segments black; third segment in male about one and one-half times as long as the second. Arista thickened on basal two-fifths to one-half, the penultimate segment scarcely longer than broad. Width of front in male at narrowest point measuring slightly less than the length of the second antennal segment; the front silvery pollinose; frontal vitta dull, dark brown, at narrowest point—in male—slightly wider than either side of front just cephalad of the ocellar triangle. No orbital bristles in male, the proclinate ocellars somewhat weak and reduced in cases to mere hairs; the single row ot frontal bristles decending nearly to the base of the third antennal segment.

Thorax subshining, black, covered with gray pollen; scutellum gray pollinose on a black ground in most specimens tinged reddish, especially at the apex. Typically three sternopleural bristles but considerable variation noticeable in the type material; typically four dorsocentral bristles, but these likewise vary considerably in the type material; scutellum with three marginal pairs of machrochaetae and an apical cruciate pair. Legs black, the middle tibiae with two or more bristles on the front side near the middle, the hind tibiae without a comb-like row of bristles on the outer side. Wings hyaline; R_{4+5} (third vein) with a group of two to five hairs both above and below at the junction with R_{2+3}. Tegulae white.

Abdomen subshining; silvery pollinose on a black ground that occasionally becomes reddish, particularly on the lateral parts of the first three segments. Discal machrochaetae present on the second, third and fourth abdominal segments; median marginals present on the same segments. The hind margin of the third tergum strongly arcuate. The fifth tergum distinctly marked off by a suture from the sixth or first genital segment and laterally being a third as long as the lateral part of the fourth abdominal segment. The sixth and seventh abdominal segments forming somewhat distended genital segments.

Male genitalia black. The basal part of the outer forceps is expanded into a broad, leaf-like portion. The basal part of the inner forceps is equipped with a short median, keel-like projection, the basal edge of which is concave in profile.

The horseshoe-like indenture extends rather more than half way to the base of the fifth sternite.

Described from ten males taken at Great Falls, Va., (type locality), Mount Vernon, Va., Cabin John Bridge, Maryland, Bladensburg, Md., Plummers Island, Md., Hartford, Conn., Malden, Mass., and North Saugus, Mass. Material collected in April and May.

Type No. 24355 in the U. S. N. M., Washington, D.C. A paratype in the National Collection at Ottawa.

Ernestia incisa sp. n.

Description of male. Head at vibrissae nearly as thick as at base of antennae, vibrissae far above the oral margin. Palpi in the single type speci-

men black. Eyes hairy. Cheeks (below the eyes) white pollinose on a black ground, subshining on the lower part that is covered with black hairs, a row of stouter hairs or bristles at the oral margin. Distance from the oral margin to the base of eye equal to about one-third the eye height. Sides of face covered with silvery pollen; bare; narrowest width equal to the length of the second antennal segment. Facial ridges bristly on the lowest fourth. Facial depression silvery pollinose, without any carina. Antennae reaching the lowest fourth of the face, all three segments black; third segment about one and one-half times as long as the second. Arista thickened on basal two-fifths, the penultimate section scarcely longer than broad. Width of front at narrowest point measuring slightly greater than the length of the second antennal segment, the front silvery pollinose; frontal vitta dull, dark-brown, at narrowest point slightly wider than either side of front just cephalad of the ocellar triangle. No orbital bristles, the ocellars proclinate; the single row of frontal bristles extending nearly to the base of the third antennal segment.

Thorax subshining, black, covered with gray pollen; scutellum gray pollinose on a black ground that is very slightly reddened at the apex. Three sternopleural bristles and four pairs of dorso-centrals. Scutellum with three pairs of marginal macrochaetae and an apical cruciate pair. Legs black, the middle tibiae with two or more bristles on the front side near the middle; the hind tibiae without a comb-like row of bristles on the outer side. Wings hyaline; R_{4+5} (third vein) with a group of five to ten hairs both above and below at the junction with R_{2+3}. Tegulae white.

Abdomen subshining; silvery pollinose on a black ground. Discal and median marginal macrochaetae on segments two, three and four. The hind margin of the third tergum slightly arcuate. The fifth tergum which is pollinose, clearly marked off from the sixth which is shining; the fifth tergum is at its greatest length about one-fifth the length of the lateral part of the fourth. The sixth and seventh abdominal segments form the somewhat distended genital segments.

Male genitalia black. The basal part of the outer forceps is expanded into a broad, leaf-like portion. The basal part of the inner forceps is equipped with a short median, keel-like projection, the basal edge of which is very slightly concave in profile.

The horseshoe-like indenture extends a little less than half way to the base of the fifth sternite. The outer edges of the prongs are deeply incised, thus affording a character that serves to separate the species from any other North American species.

Described from a single male taken at Carlisle Junction, Pa., by W. R. Walton.

Type No. 24356 in the U. S. National Museum, Washington, D. C.

Ernestia aldrichi Town.

Head at vibrissae about as thick as at base of antennae; vibrissae well above the oral margin. Palpi dusky yellow to almost black. Eyes hairy. Cheeks (below the eyes) white pollinose on a black ground, subshining on

the lower hairy part, a row of bristles at the oral margin. Distance from the oral margin to base of eye equal to about one-third the eye height; sides of face covered with silvery pollen; bare; narrowest width not quite equal to the length of the second antennal segment. Facial ridges bristly on the lowest fourth. Facial depression silvery pollinose, without any carina. Antennae reaching the lowest fourth of face, all three segments black; third segment about one and one-fourth times as long as the second. Arista thickened on basal two-fifths to one-half, the penultimate segment slightly longer than broad. Width of front in both sexes about twice the length of the second antennal segment; the front silvery pollinose; frontal vitta dull, dark-brown, at narrowest point one and one-half to twice as wide as either side of front just cephalad of the ocellar triangle. One pair of orbital bristles in the male, two pairs in the female. Ocellar bristles present in both sexes and proclinate, the single row of frontal bristles descending almost to the base of the third antennal segment.

Thorax subshining, black, covered with gray pollen; scutellum gray pollinose on a black ground. Typically three sternopleural and four dorsocentral macrochaetae but both sets are quite variable; scutellum usually with three pairs of marginal and one pair of cruciate apical bristles. Legs black, the middle tibiae with two or more bristles on the front side near the middle, the hind tibiae without a comb-like row of bristles on outer side. Wings hyaline. R_{4+5} (third vein) with a group of two to five hairs both above and below at the junction with R_{2+3}. Bend of M_{1+2} with a very short appendage in a few of the males, otherwise destitute of an appendage. Tegulae white.

Abdomen subshining; silvery pollinose on a black ground. Discal and marginal macrochaetae present on the second, third and fourth abdominal segments. The hind margin of the third tergite somewhat arcuate in the male. The fifth tergum in the male marked off from the shining sixth by a suture, longer laterally than medially, laterally about one-fifth the length of the lateral part of the fourth tergum. The sixth and seventh abdominal segments in the male forming the somewhat prominent genital segments.

Genital segments of the male black. The basal part of the outer forceps covered by a leaflike expansion. The basal part of the inner forceps with a long median, keel-like projection.

The indenture in the last sternite of the male extending half the distance toward the base of the sternite.

Redescribed from the type material consisting of three males and four females, from Brookings, S. D., in the U. S. N. M., Washington, D. C. One paratype transferred by courtesy of the collector, Dr. J. M. Aldrich, to the Canadian National Collection, Ottawa.

Ernestia longicarina sp. n.

Description of male. Head at vibrissae almost as thick as at base of antennae; vibrissae far above the oral margin. Palpi yellow. Eyes hairy. Cheeks (below the eyes) pale golden pollinose on a black ground, subshining on the lower hairy part, a row of bristles at the oral margin. Distance from oral margin to base of eye equal to about one-third the eye height. Sides of face pale golden pollinose; bare; narrowest width slightly less than the length of the second antennal segment. Facial ridges bristly on the lowest fourth. Facial

depression pale golden pollinose without any carina. Antennae reaching lowest fourth of face, all three segments black; the third segment about one and one-fourth times as long as the second. Arista thickened on basal half, the penultimate segment scarcely longer than broad. Width of front at narrowest point equal to about three-fourths the length of the second antennal segment; the front silvery pollinose; frontal vitta reddish brown, the narrowest width equal to about one-half the width of front at vertex. No orbital bristles, the proclinate ocellar bristles fairly well developed; the single row of frontal bristles descending to about the middle of the second antennal segment.

Thorax subshining, black, covered with gray pollen, scutellum gray pollinose on a black ground and showing no red coloration even at the extreme tip. Typically three sternopleural bristles and three pairs of dorsocentrals; scutellum with three strong pairs of marginal macrochaetae, with an apical cruciate weaker pair and without any discals. Legs black, the middle tibiae with two or more bristles on the front side near the middle, the hind tibiae without a comb-like row of bristles on the outer side. Wings hyaline; R_{4+5} (third vein) with a group of two to five hairs both above and below at the junction of R_{2+3}; the bend of M_{1+2} destitute of an appendage. Tegulae white.

Abdomen subshining; very lightly silvery pollinose on a black ground. Discal and marginal macrochaetae present on the second, third and fourth abdominal segments. The hind margin of the third tergum very strongly arcuate; the fifth tergum readily marked off from the sixth at the lateral part but medially indistinguishable from it. The lateral width of the fifth tergum equal to about one-third the lateral width of the fourth abdominal segment; the sixth and seventh abdominal segments forming the somewhat distended genital segments.

Genitalia black; differing from all other known nearctic species in having an exceedingly long keel-like portion at the base of the inner forceps (named on account of this unusually long keel). The basal part of the outer forceps covered over by a broad, leaf-like portion.

The horseshoe-shaped indenture of the last sternite extending slightly more than half the distance to the base of the blade.

Described from four males collected by Mr. E. C. Van Dyke at Lake Tahoe, California on September 20th.

Type and one paratype in the Cal. Acad. Sci. One paratype in the Canadian National Collection, Ottawa. One paratype in the U. S. N. M.

(To be Continued.)

A REVIEW OF THE GENUS MONOCHAMUS SERV. (CERAMBYCIDAE, COLEOPTERA)

BY RALPH HOPPING,

Entomological Branch, Department of Agriculture, Ottawa.

A study of long series of the different species of this genus has made it evident that a few changes in the synonomy are necessary. The writer's interpretation of the North American species is expressed in the accompanying key.

Leng and Hamilton* place *obtusus* Casey and *oregonensis* Lec. as synonyms of *scutellatus;* but all three of them appear to be distinct. Col. Casey has transferred *oregonensis*** Lec. to the dentiform group, but the writer feels he must have mistaken a black form of *maculosus* for that species: this would account for the description of *monticola* Casey, which appears to be the true *oregonensis* Lec.

The most strongly maculated species are *titillator, maculosus, obtusus* and *marmorator. M. maculosus* may be densely black or reddish brown, although the red-brown individuals are probably newly emerged.

The length of the antennae varies greatly within the limits of each species and appears to the writer to be of little specific importance. The sexes, however, can be separated by antennal characters, since the females of all species have the antennae but little longer than the body, often with the segments bicolored, while the males have the antennae much longer than the body and the segments as a rule unicolorous.

The size varies greatly in each species apparently according to the condition of the food supply. Individuals are generally smaller in arid sections where the recently fallen or cut timber dries rapidly.

The key to the species herein submitted is based upon an examination of the material in the Oregon Agricultural College, very kindly loaned by Professor Lovett, the material in the collection of the California Academy of Sciences, that in the private collection of Dr. F. E. Blaisdell and Dr. E. C. Van Dyke, the Ottawa collection of the Entomological Branch and that of the author.

M. angusticollis is known only from the description. Of the species included in the table the writer has examined the following number of adults:—12 *marmorator,* 17 *obtusus,* 85 *maculosus,* 50 *titillator,* 102 *oregonensis,* more than 200 *notatus* and over 500 *scutellatus.*

Key to Species.

A. Apices of elytra produced into an acute spine or blunt process.

B. Process of elytral apex arising from sutural angle.

C. Process of elytral apex slender, acute or subacute; body and antennae comparatively slender; punctation of elytra sparse and fine, ashy vestiture in more or less definite areas; general color reddish *titillator* Fab.

CC. Process of elytral apex blunt; body comparatively short and robust; punctation of elytra dense and coarse, ashy vestiture more or less diffused; general color black or rufous ..... *maculosus* Hald.

BB. Process of elytral apex not arising from sutural angle.

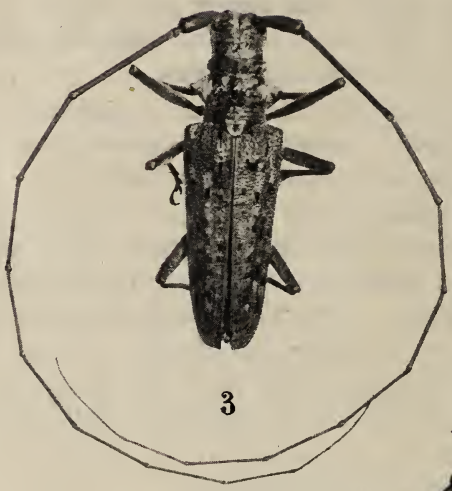
C. Process of elytral apex arising from the rounded apices, spinous *angusticollis* Casey

CC. Process of elytral apex arising from the obliquely prolonged apices; vestiture of elytra often in definite patches; general color yellowish brown ..... *marmorator* Kirby

*Transactions Am. Ent. Soc., 1896, XXIII, p. 109.
**Memoirs on the Coleoptera, IV, 1913.

1

2



3

4

5

6

THE GENUS MONOCHAMUS

Fig. 1.—*M. titillator*, ♂ ; 2.—*M. notatus* ♀ ; 3.—*M. notatus*, ♂ ; 4.—*M. titillator*, ♀ ; 5.—*M maculosus*, ♀ ; 6.—*M. maculosus* ♂. (All figures enlarged one-half.)

AA. Apices of elytra not produced into a spine or process.
B. Elytral apex obtusely angulated at the suture.
C. Elytra without raised linear elevations.
D. Scutellum generally covered with ashy scales, posterior margin rounded; elytra with a vague bronze lustre, maculation often entirely absent; general color black ..... *scutellatus* Say
DD. Scutellum bilobed or V-shaped with only the lobes covered with ashy scales and separated by a minute triangular glabrous area; maculation of elytra absent or sparse; general color densely black. *oregonensis* Lec.
CC. Elytra with raised linear elevations.
Scutellum sparsely clothed except towards the margins; elytra densely, finely punctured with scattered, raised, often linear, glabrous areas; general color greyish brown ..... *notatus* Drury
BB. Elytral apex not angulated at the suture, evenly rounded; punctation sparse and fine, scutellum glabrous and rufous; general color rufous. *obtusus* Casey

M. titillator Fab. (Lamia), 1775, Syst. Ent. p. 279.

carolinensis Oliv.; *minor* Lec.; *dentator* Fab.

Col. Casey has resurrected *carolinensis* Oliv. from the synonymy of this species. Leng and others treat the name as a synonym. In long series every variation in size, maculation and reduction of the spine into a blunt form may be found.

I have a specimen of *titillator* from the southern Sierras of California, which I collected over twenty-five years ago. I have, however, a strong suspicion that my California specimen came from lumber shipped from the east. Former reports of the capture of this species from California probably refer to *M. obtusus* Casey.

The slender antennae and the sparse punctation in the cinereous areas will always serve to separate this species from *maculosus,* besides the differences enumerated in the key; the vestiture consists of light brown or yellowish tomentose areas separated by cinereous areas, sparsely punctured. Specimens from the far north have only indications of the ashy areas, and seem narrower in form; however, I cannot separate them from *titillator* by any definite characters. Length, 13 to 25 mm.

Host.—Pinus palustris, P. strobus and probably all pines and *Abies balsamea.*

Habitat.—Eastern North America, extending west to Alabama in the south and possibly to British Columbia and Alaska.

M. maculosus Hald., 1874, Trans. Am. Phil. Soc., X, p. 51.

strenuus Casey; *oregonensis* Lec. (Casey); *clamator* Lec.

Col. Casey's interpretation of *M. oregonensis* Lec. as well as his *strenuus* seem to belong here. Occasional specimens of *maculosus* in a series from the same tree show all variations of "rusty brown tomentum". The length of the antennae is very variable in all species and series. The rugosities of the elytra are irregular in form, the vestiture consisting of dark brown, rusty brown or

black tomentum separated by cinereous areas of scales arranged in minute separated groups. Length, 16 to 26 mm.

Hosts.—Breeds more commonly in lodgepole pine (*Pinus contorta*) than in yellow pine (*Pinus ponderosa*).

Habitat.—Colorado, New Mexico, Arizona, California, Oregon, Washington, Nevada, Idaho and British Columbia.

M. angusticollis Casey, 1913, Mem. on the Coleop. IV, p. 292.

I have not seen this species nor can I find that it exists in any collection other than that of Col. Casey, which, since it comes from Texas, is not strange. Material from that state, in the Cerambycidae, seems to be notably absent in collections. The position of the apical spine would separate it from any other species. Length, 18.5 mm.

Host.—Unknown.

Habitat.—Texas.

M. marmorator Kirby, 1837, Faun. Bor. Am. IV, p. 169.

fautor Lec.; *acutus* Lacord.

The characters given in the key are amply sufficient to distinguish this species, which is still rare in collections. The vestiture of the elytra is ochraceous white and brown or black in more or less definite patches. Length, 18 to 25 mm.

Host.—Abies balsamea.

Habitat.—New York, Vermont, Nova Scotia to Great Lakes Region.

M. scutellatus Say, (Cerambyx), 1824, Long's Exp. II, p. 289.

resutor Kirby; *mutator* Lec.

I have this species from Alaska, Hudson's Bay, Michigan, Ontario and Massachusetts, and have seen specimens from all the spruce regions of Canada. The vestiture is either wanting or consisting of a few ashy, irregularly placed scales. Some females, however, are fairly well covered with ashy vestiture of no particular design.

Alaskan specimens generally have the femora red but do not seem to differ otherwise. The antennae, especially the scape, seem to be brownish and seldom black as in *M. oregonensis,* and have the elytra vaguely bronzed. The ♀ ♀ are generally smaller than the ♂ ♂. Length, 13 to 24 mm.

Hosts.—Pinus strobus, P. banksiana, P. resinosa, Picea canadensis, and *Abies balsamea.*

Habitat.—New England, Canada (except British Columbia), Alaska.

M. oregonensis Lec., 1873, Smiths. Misc. Coll., XI, No. 264, p. 231.

monticola Casey.

Mr. Lawrence Reynolds very kindly examined Le Conte's type for me. It was found to agree with what has always been called *oregonensis* in the west. The large stout form, dense black color, and the scutellum distinguish this species. The vestiture is much as in *scutellatus.* The ♀ ♀ are as large as or larger than the ♂ ♂. *M. oregonensis* is distributed throughout the west where *Pseudotsuga taxifolia* and *Abies concolor* are found, although it attacks other coniferous species within the area. Length, 13 to 30 mm.

Hosts.—Abies concolor, Abies magnifica, Pseudotsuga taxifolia, Pinus

1

2

3

4

5

6

7

8

THE GENUS MONOCHAMUS

Fig. 1.—*M. marmorator*, ♀; 2.—*M. oregonensis*, ♀; 3.—*M. scutellatus*, ♀; 4.—*M. obtusus*, ♂; 5.—*M. scutellatus*, ♂; 6.—*M. oregonensis*, ♀; 7.—*M. obtusus*, ♀; 8.—*M. marmorator*, ♂.

contorta. Specimens from *Pinus contorta* are usually smaller, with the elytra of the males more densely maculate.

Habitat.—British Columbia, Washington, Oregon, California, Nevada, Utah, Colorado, Arizona, New Mexico.

M. notatus Drury, 1773, Ills. of Nat. Hist. II, p. 65.

**confusor* Kirby.

This species can be readily distinguished by the smoky grey color. Occasionally the glabrous rugosities become obsolete, or may be rounded. It averages larger than any other species and is a good illustration of the tremendous variation in size, the minimum being .50 inch and the maximum 1.50 inch, an extreme variation of one inch. Length, 16 to 40 mm.

Hosts.—Pinus strobus, P. banksiana, P. resinosa, P. ponderosa, Picea canadensis.

Habitat.—Northeastern part of the U.S. and Canada, including British Columbia.

M. obtusus Casey, 1913, Mem. on the Coleop. IV, p. 293.

This is a very good species, breeding in pines of north central California, where the cross ranges connect the coast mountains with those of the interior. In maculation and punctation it is much nearer *titillator* than any other species, but has a remarkably short, robust form. The sutural length of the elytra is seldom more than twice the basal width, whereas in all other species it is much more than twice the basal width. The characters given in the key and enumerated by Col. Casey make it impossible to confuse this species with any other. Besides the specimens in my cabinet, I have seen a much larger series in the collection of the Academy of Sciences in San Francisco taken by Dr. E. P. Van Duzee. Length 19 to 23 mm.

Hosts.—Pinus ponderosa, P. contorta.

Habitat.—California (Lassen and Siskiyou Cos.)

A NEW WESTERN SYRPHID (DIPTERA).

BY C. HOWARD CURRAN,
Orillia, Ont.

Toxomerus occidentalis n. sp.

Mesogramma geminata Williston (in part).

Differs from *T. geminatus* Say in the shape of the process on the hind femora, which is shorter and bears a shorter and stouter arm; the front is wider in the female, the vertical triangle slightly wider in the male; band on first segment always interrupted in both sexes.

Length, 6.5 to 8 mm. ♂. Face yellow, below and at the sides finely silvery pubescent; cheeks black behind. Antennae reddish yellow, arista black; vertical triangle long, narrow, black, in front and at the vertex with yellowish pollen, in the middle very shining; eyes less distinctly touching than in *T. geminatus,* especially dorsally. Pile of the front whitish, a few blackish hairs immediately above the antennae, and entirely black on the vertical triangle.

*It is a little doubtful if Drury's species *notatus*, from Norway is our *confusor* and the latter name may have to be re-established.

Posterior orbits greyish pollinose, becoming more yellowish above.

Thorax shining greenish, somewhat bronzed black, with three broad, subcontiguous opaque brownish bronzed stripes; median cinereous line distinct on the anterior half. Yellow lateral margins complete. Pleurae bluish black, the mesopleura with oblong-oval yellow spot, and a white pubescent spot below it. Scutellum shining olivaceous black with yellow border. Pile of thorax and scutellum obscurely yellowish, the latter with a fringe of long black hairs; pleurae with sparse whitish pile.

Abdomen deep shining black; first segment with only the antero-sides or with a very narrow anterior border yellow. Second segment with a narrow median, slightly arcuate or straight, interrupted yellow band, the lateral margins in front of this narrowly yellow; or with the band almost obsolete and the margins black. Third segment with a median longitudinal yellowish line abbreviated at both ends, the black in front forming more or less of a circle; at each side with a basal, broad yellow band, with an oval production posteriorly at the inner end. Fourth segment with five yellow spots, the median one similar to the median line on the third segment; two elongate broad, longitudinal spots, their posterior ends rounded, situated each side of the median spot, and two sub-square spots, longer laterally, on the anterior angles. Fifth segment with the sides yellow, more narrowly so posteriorly. Apical margins of second to fifth segments yellow or reddish. In darker specimens the median lines are almost obsolete and the spots all smaller, those on the posterior angles of the fourth segment triangular and the apex of the fifth segment black. The spots on the third segment occupy not more than the anterior half of the segment where they are longest. (In *geminatus* they always occupy considerably more than half, even in very dark specimens.)

Legs yellow, including the hind coxae; posterior femora black, except the ends; tibiae with a black band near the end; hind tarsi brown, anterior tarsi reddish apically; the hind femora sometimes with only a black band subapically in the female. In the male the hind tibiae broadly produced at the apical end, and arcuate; hind femora strongly arcuate, the process near the base stouter and with shorter arm projecting posteriorly than in *geminatus*.

Wings hyaline, stigma yellowish brown.

♀. Antennae with the third joint broadly brownish above; face distinctly white pilose below; front shining black, black pilose; not as much narrowed above as in *geminatus* and the yellow on the sides also seems to be slightly narrower; abdomen, second pair of basal spots moderately broad, a little broader medially and laterally, interrupted medially by a roundish black circle with a dibber-shaped yellow spot in its middle, spots not reaching the margin; spots on the fourth segment enlarged postero-medially; fifth segment with triangular spots on the basal corners and a smaller anterior spot in the middle; in other respects as in the male.

Holotype. ♂, Victoria, B.C., May 5, 1919, (W. Downes).

Allotype. ♀, Saanich Dist., B.C., May 17, 1909 (Downes).

Types in the Canadian National Collection. Paratypes, 40 specimens of both sexes from California, Oregon and British Columbia.

This species is very distinct from *T. geminatus* Say and may be distinguished readily by its very dark shining appearance, and definitely distinguished in specimens which approach *geminatus* in color by the basal process on the hind femora. *T. geminatus* does not appear to be common west of the mountains, but I have specimens from British Columbia. I have seen no specimens of *occidentalis* from east of the Rockies. An occasional specimen has the first band only slightly interrupted.

A GENUS AND SPECIES OF SYRPHIDAE NEW TO CANADA

BY C. HOWARD CURRAN,
Orillia, Ont.

The type species of the genus *Chalcomyia, C. area* Loew, was taken in Illinois. A second species, which is herein described, was taken by the writer on May 8th, 1921, at Orillia, on the common wild black or pin cherry. Two specimens were taken late in the afternoon, which was sunny, but a cold wind was blowing. Both specimens were resting upon flowers and resembled a small Muscid. They were a good ten feet from the ground. The legs in this species are entirely deep steely black, as is the general color. *C. area* has the legs considerably pale.

Chalcomyia calcitrans n. sp.

Habitat.—Ontario: early spring; edge of woods.

♂. Length, 6 to 6.5 mm. Eyes bare, moderately separated. Face and front shining deep black, the face, except a broad median stripe, silvery pubescent; cheeks shining; facial pits long, almost as in *Chilosia.* Face wihout pile, in profile strongly convex, with small but conspicuous tubercle below the middle; oral margin projecting as far forward as the antennal base and produced moderately downward. Vertical triangle with sparse, long black and white pile behind the anterior ocellus; front bare. Posterior orbits with long gray pile below, becoming shorter and more whitish above. First antennal joint black, second brownish yellow, third reddish yellow; arista black, bare.

Thorax, scutellum, abdomen and legs deep shining bluish or greenish black. Thorax with short yellow pile, with some longer black hairs around the sides of the dorsum; pleurae almost bare. Scutellum short yellow pilose, with some longer black hairs apically. Abdomen with short, inconspicuous whitish pile, wholly shining. All the femora somewhat thickened; hind tibiae slightly arcuate, tarsi with pads of golden pubescence beneath.

Wings sub-hyaline, slightly tinged with luteous; stigma luteous.

The abdomen is almost triangular in shape, the hypopygium large and inclined to the right. The color appears bluish black to the naked eye, but slightly greenish black under the microscope. The fly is very shining.

Holotype.— ♂, Orillia, Ontario, May 8, 1921 (Curran), in the Canadian National Collection, Ottawa. Paratype, ♂, same place and date, in the author's collection.

Since the above description was prepared two further specimens, both males, have been identified. They were taken at McDiarmid, Ont., by N. K. Bigelow, of the Ontario Museum, Toronto. The species is evidently northern in distribution.

BOOK REVIEW

Applied Entomology, An Introductory Text-Book of Insects in Their Relation to Man, by H. T. Fernald, New York: McGraw-Hill Book Company, Inc. p. I–XIV, 1–386, 388 text figures, 1921.

This book, as stated by the author, is intended primarily as a classroom text for students in Agricultural colleges who do not intend to specialize in Entomology but "need it as a part of their agricultural education and particularly as a tool which they can use wherever insects are related to their special lines of work."

In attacking this problem of writing a combined text book of systematic and economic entomology, even for the class of students referred to, the author has undertaken a very difficult task and one which many teachers of the subject feel cannot be done satisfactorily. However, there are many teachers who hold the opposite view. But, whatever the view, this new book will be welcome to all as a valuable contribution to entomology and, whether it is used as a text book or not, it will often be consulted by teachers and students; for it is written in a very readable and interesting style and presents most of the essential facts of elementary systematic entomology in a new and attractive manner and also gives a fairly full account of most of our insect pests and of the methods of their control.

The first 58 pages are devoted almost entirely to an account of the external and internal structures of insects, their development, losses caused by them, nature's method of control, insecticides, fungicides and fumigation. Each of these topics is treated briefly and yet with sufficient fullness to give a good general knowledge of the subject.

The main part of the book, or a little more than 300 pages, is composed of a description of the characteristics and peculiarities of the different orders and of the chief families under these orders, together with a description of the chief insects of economic importance under each family, their habits, life histories and methods of control. Much attention is paid to this economic aspect and in consequence most of the very destructive insects of North America are discussed at considerable length.

There are many good illustrations and a few that are somewhat poor. A few more illustrations, especially of the immature stages of insects in certain orders, would have been an improvement and also the addition of a host index.

The life histories and control measures of the various insects discussed are, with a few exceptions, up-to-date and sufficiently full for the purpose.

There are a few typographical errors and inaccuracies here and there throughout the text but not sufficient to mar the value appreciably.

The book should be very welcome, not only to teachers and to undergraduates in agricultural colleges but also to many others who are interested in entomology.—L. Caesar.

OBITUARY.

The Rev. Thomas W. Fyles, d. c. l., f. l. s.

The Entomological Society of Ontario has lost its most aged member and one of its most devoted friends and supporters through the death of the Rev. Dr. Fyles, which took place at Ottawa on Tuesday, August 9th, 1921, after an operation for some internal trouble; his remains were interred in the Beechwood cemetery on the following Thursday. Born at "The Hermitage", Enfield Chase, England, on the first of June, 1832, he had entered upon his 90th year when he died. After completing his education in London he came to Canada in 1861 and took up his residence in Montreal. In 1864 he was ordained by Bishop Fulford in Christ Church Cathedral and was appointed to the charge of the parish of Ironhill in the Eastern Townships where he was instrumental in building a church and parsonage. After an incumbency of eight years he was transferred to Nelsonville, where also he succeeded in building a rectory; there he remained for eleven years doing faithful work among his parishioners, whose love and esteem he speedily won. In those days the Eastern Townships, lying south of Montreal and the other side of the St. Lawrence were inhabited by English-speaking farmers and others, mostly from "the old country", who were Protestant in their religion and largely members of the Church of England. Now very few of their descendants are to be found in that beautiful and fertile region of country, their places having been filled by French-speaking Roman Catholics.

With his inborn love of nature in all its aspects, Dr. Fyles enjoyed to the utmost the rural scenes and varied life of animals and plants with which he was surrounded. Mountains and hills, lakes, rivers and ponds, woodland streams and swamps, forest glades, flower-spangled meadows, orchard and garden, all were to him full of charm and interest, and gave him the utmost delight. While all nature was full of "the glory of God" and appealed to his heart's deepest emotions, he was devoted especially to the study of the manifold forms of insect life which were everywhere to be found about him. It thus came about that in the course of time he gradually formed a large and beautiful collection of butterflies, moths and other insects. The results of his observation and studies are to be found in many admirable papers which are published in the Annual Reports of the Entomological Society of Ontario, and which he read at its meetings.

In 1883, after spending nearly a score of happy years amid country scenes and kindly people, he removed to Levis, opposite the City of Quebec, and was employed by the Society for the Promotion of Christian Knowledge (London, England) as immigration Chaplain. For twenty-five years he filled this post, meeting all the incoming ships with their varied crowds of new settlers. To them, bewildered often by their new surroundings he was a veritable friend in need, and did much to relieve their difficulties and cheer them on their way. The work was sometimes very arduous when a number of large ships arrived fully loaded with passengers coming to the new lands of this vast Dominion.

During the winter months, when navigation was closed and the port of Quebec securely ice-bound, Dr. Fyles had time to devote to his favourite study

of Entomology. In 1897 he succeeded in the formation of the Quebec Branch of our Society, acting as its President and in fact its mainstay, as after his departure in 1909, the Branch, in spite of heroic efforts on the part of some of its members, gradually died out through having lost its inspiration and its guide. In recognition of his learning and ability, he was appointed Honorary Professor of Biology in Morrin College, Quebec; Fellow of the Linnean Society of London; and given the honorary Degree of D. C. L. by the University of Bishops' College, Lennoxville, Quebec. From 1899 to 1901 he was President of the Entomological Society of Ontario, and its delegate to the Royal Society of Canada in 1890, 1894 and 1895; he was also for many years a member of the Council of the Society and of the Editing Committee of the "Canadian Entomologist."

In 1909 he gave up his work at the Port of Quebec owing in some measure to an accident which had injured his foot and impaired his powers of walking and former activity. Before leaving, his fine collections were transferred to the Museum in the Quebec Parliament Buildings, where, no doubt, they are well looked after and carefully preserved. On his retirement and resignation of active work, at the age of 77 years, he had well earned a period of rest. He spent three years at Hull and in 1912 removed across the river to Ottawa, where he remained until the hour of his death.

Dr. Fyles was a constant contributor during a long series of years, to the publications of the Entomological Society of Ontario. His first papers in the "Canadian Entomologist" were "Notes on a Gall-mite of the Nettle-Tree (*Celtis occidentalis*)" in October, 1882, and "A Description of a Dipterous Parasite of *Phylloxera vastatrix, Diplosis grassator,* new species" in December, 1882. The latter was also published, as his first contribution to the Annual Reports, in the Fourteenth, for 1883. Many papers of a descriptive or systematic character appeared in the magazine, but his most characteristic articles were those read at the meetings of the Society and published in the Reports. His inimitable manner of reading and the keen humour that pervaded many of them charmed his audience and will not soon be forgotten by those who had the privilege and opportunity of hearing them.

For thirty-four years he never failed to furnish a paper for our meetings; the last, in 1916 on "The Naturalist in the City", describing various incidents that came under his observation while living in Ottawa. Among the seventy-six papers that appeared in the Reports were many that showed his extensive knowledge of Entomology in most of its orders, as may be learnt from the following titles: "Certain Forms of Neuroptera in their Relation to the Fishing Interests"; "Butterflies" with tables for the determination of the species found in the Province of Quebec; "The Sphingidae of Quebec Province", with similar useful tables; "Dragon-flies of Quebec"; "Crickets"; "Paper-making Wasps"; "Food-habits of Hymenopterous Larvae"; "Hemiptera"; "Two-winged Flies"; "Forest Insects"; "The Tussock Moths"; "Notodontidae" and several others.

His most delightful papers, however, were of a different character and in his own wonderful style that charmed those who heard or read them. The following series may be mentioned especially: "Voices of the Night", "The Pool",

"The Stream", "Green Lanes and Byways", and "Mountains and Hills". In these papers are depicted not only varied forms of insect life, but also observations of other living creatures in air and water and on earth. All living things among animals and plants were of engrossing interest to this keen-eyed lover of nature in all its aspects.

A few other remarkable papers may be mentioned as examples of his literary tastes and skill: " Visit to the Canadian Haunts of Philip Henry Gosse" (author of the "Canadian Naturalist"); "How the Forest of Bedford was Swept Away"; "The Entomology of Shakespeare"; and "Entomological Mistakes of Authors".

Dr. Fyles was no mean artist, as the original illustrations in many of his papers plainly show. He was also in the habit of presenting large colored diagrams of the insects that he referred to in his lectures and addresses. He presented a large, handsomely bound folio volume of these diagrams to the Society's library as an expression of his gratitude for all the Society had been to him during a long series of years.

He was a notable example of an old-time naturalist, a class of nature-lovers now almost extinct in these days of specialization and devotion on some single family or group of insects. His innate interest found scope in his boyish days when, after his father's early death, he spent many summer holidays at the country home of his grandmother, and together with his uncle, Edwin Tearle, at that time a boy of about the same age, roamed the woods and hills in search of birds and butterflies. To this friend and companion he was much devoted and after coming to Canada kept up a long correspondence with the exchange of verses. In the two volumes of poems that he published are references to this friend of earlier days.

The writer may conclude this sketch of a beloved and revered friend with a quotation from a letter received from him a few years ago:—

"I look back and I thank God for the brightening of my life that my connection with the Entomological Society of Ontario has been to me, and yet a feeling of sadness comes over me when I think of the good old friends who have passed "the Great Divide", and every change seems to say—the days darken round us and the years, among new men, strange faces, other minds—and the remembrance of our departed friends calls for thankfullness, for it is a pleasant remembrance, yes, and I am thankful". Charles J. S. Bethune.

CORRECTIONS AND EMENDATIONS

P. 184. Transpose line 5 to follow line 2.

Prof. T. D. A. Cockerell has called my attention to the fact that the genus *Vitrinella*, proposed by me for a Geometrid genus (1920, Studies in N. Am. Cleorini, 27) is preoccupied by *Vitrinella* Adams (1850) in Mollusca. The name *Anavitrinella* may be used to replace it

I might also note that in the above mentioned paper the species *agrestaria* Grossb. was omitted, by oversight, from the genus *Pterotaea*, although figured under this generic name on Plate VI, fig. 11. J. McDunnough.

How to Know the Butterflies

A Manual of the Butterflies of the Eastern United States

By John Henry Comstock, Emeritus Professor of Entomology, Cornell University, and Anna Botsford Comstock, Assistant Professor of Nature Study, Cornell University.

This work contains descriptions of 152 species and varieties of butterflies. This includes all of the species and their named varieties found in the eastern half of the United States, excepting a few extremely rare forms.

There are 45 plates with 312 figures showing the insects in their natural colours and 49 figures in the text.

The work is written in popular form without being superficial, and will serve as a Baedeker among Butterflies to the casual observer or the close student of this most picturesque phase of nature.

311 pages + 45 full-page coloured plates—$3.50 net.

McClelland & Stewart, Ltd., Toronto.

Canadian Representatives.

THE COMSTOCK PUBLISHING CO.

ITHACA NEW YORK

IN STOCK

	1st qual.	2nd qual.
Morpho menelaus per 100	$110.00	$ 78.00
Morpho rhetenor per 100	200.00	100.00
Morpho adonis per 100		75.00
Ornithoptera hecuba (males)	65.00	45.00

Lycaena exelis $6.00, European Lyc $5.00, and beautiful African Lycaena $8.00 per 100.

Bright, brilliant mixed Butterflies, all suitable for Jewelry, Trays and decorative purposes, good quality, $17.50 per 100.

Over 50,000 Butterflies now in stock.

Prices Net. American Currency. Terms Cash or C.O.D.

G. G. MacBean, Dealer

ASSINIBOIA, SASK., CANADA

G. A. BENTALL

NATURALIST

392 Strand, London W. C. 2

ENTOMOLOGICAL SUPPLIES OF ALL KINDS

Any of the following Circulars sent without charge:

Books, Palaearctic, Indo-Australian, African or American Lepidoptera and other Orders.

An Introduction to Entomology

By John Henry Comstock, Professor of Entomology and General Invertebrate Zoology, Emeritus in Cornell University.

Part 1.

THE STRUCTURE AND METAMORPHOSIS OF INSECTS

This volume is the first part of a text-book of entomology that Professor Comstock has in preparation. It is, however, a complete treatise on the structure and metamorphosis of insects. The part now published includes four chapters. The first chapter is entitled "The Characteristics of Insects and Their Near Relatives." In this chapter the characteristics of the Arthropoda and of each of the thirteen classes of arthropods is discussed, with figures of representatives of each of these classes. The second chapter is devoted to a detailed discussion of the external anatomy of insects. The third chapter treats of the internal anatomy of insects and includes the results of recent investigations in this field. In the fourth chapter there is a detailed account of the transformation of insects, in which each of the different types of metamorphosis of insects is discussed. There is also included a bibliography and an index.

Pages XVIII. + 220, with 220 illustrations, Bound in cloth.
Price $2.50 net.

McCLELLAND & STEWART, Ltd., Toronto

Canadian Representatives

THE COMSTOCK PUBLISHING CO.

ITHACA :: NEW YORK

BRITISH COLUMBIA LEPIDOPTERA

Experienced collector and breeder of Lepidoptera, now collecting in B. C., can offer for sale many interesting species from time to time in the season. Also some **good forms.**

Purchasers desired. Correspondence **invited.**

ARTHUR TATE

KELOWNA, B. C.

The Macrolepidoptera of the World

By DR. ADALBERT SEITZ

This gigantic work of 16 volumes and consisting of about 500 parts is now fast nearing its completion. It gives almost full accounts of **all Butterflies and Moths of the whole world** and contains over 1000 well executed **colored** plates with over 50,000 **excellent** figures, yet it is proportionately the lowest priced work ever published of this kind. In the English edition, Vol. 1 to 4, giving the Palaearctic Fauna, are already completed. Vol. 5, containing the Butterflies of all America, and Vol. 9, Butterflies of the Indo-Australian Fauna, are expected to be completed this winter. **Each volume can be obtained separately.** "Seitz" is **indispensable** to every library, museum and private collector and the low subscription price enables **everybody** to purchase at least some of these volumes.

For price quotations and other desired particulars send 10c in stamps to the **only agency** of "Seitz" for North America:

The New England Entomological Co.

(temporarily) c-o A. J. Carpenter, Beacon and Joy Sts.,

Boston, Mass.

The Canadian Entomologist

Annual subscription, $2.00, including postage.

Payable in advance on the 1st of January in each year.

ADVERTISING RATES

Payable strictly in advance. For each insertion, per inch, $1.50. For six months or over, $1.00 per month.

1 page for 1 quarter .....**$20.00** ½ page for 6 months **$20.00**

YEARLY CONTRACT

One Inch	**$10.00**	Half Page	**$35.00**
Quarter Page	**18.00**	Whole Page	**70.00**

ENTOMOLOGICAL SOCIETY OF ONTARIO, Guelph, Ontario, Canada

THE KNY-SCHEERER CORPORATION

Dept. of Natural Science

G. LAGAI Ph.D.
NEW YORK U. S. A.
404-410 W. 27th St., Ninth Av.

Entomological Supplies and Specimens.

North American and exotic insects of all orders in perfect condition.

Papilio Glaucus turnus.

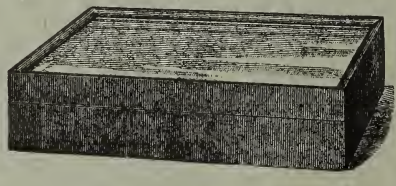
Paris Exposition
Eight Awards and Medals

Pan-American Exposition
Gold Medal

St. Louis Exposition
Grand Prize and Gold Medal

Colour variations. Metamorphoses of insects.

Single specimens and collections illustrating mimicry, protective coloration, dimorphism; collections of representatives of the different orders of insects, etc. Series of specimens illustrating insect life.



We manufacture all kinds of insect boxes and cases (Schmitt insect boxes, Lepidopets, boxes, etc.) cabinets, nets, insect pins, forceps, etc. Riker specimen mounts at reduced prices. Catalogues and circulars free on application. Rare insects bought and sold.

Ward's Natural Science Establishment

84-102 College Avenue, ROCHESTER, N.Y., U.S.A.

ENTOMOLOGICAL SUPPLIES OF ALL KINDS, INCLUDING THE

Only Genuine Hand-made

SCHMITT INSECT BOXES

provided now with 3 ply strong top and bottom.

And the Well-known

AMERICAN ENTOMOLOGICAL CO.'S INSECT PINS

We will send you without charge the following special list of circulars:

Life Histories of Insects of Economic Importance; Systematic or Type Collections; Collections of Beneficial and Injurious Insects; Mimicry and Protective Coloration; List of U. S. and Exotic Lepidoptera and Coleoptera; List of Insects in All Glass Mounts; List of Living Pupae, with rare forms from Mexico; Supply Catalogue No. 33.